Health Telematics : A challenge for Healthcare Quality.

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Abstract

A better access to medical information seems necessary to improve the coordination of medical professionals and the quality of care. A a consequence, Health Telematics is a striking challenge for :

1. The communication between professionals. Many experiences of professional networks all around the world demonstrate the feasibility and the benefits of such an electronic communication between doctors, nurses, hospitals, labs...
2. The communication between professionals and their patients. Are the professionals ready to provide their patients with relevant info?
3. A better coordination of tasks and actors. This would result in an improvement of the efficiency of any Healthcare System. Health Telematics could be one of the technical devices to attain this objective.
4. To improve communication and coordination means that professionals have to share the same information basis. It is time to examine the possibility for all professionals, around the world, to share a common patient medical record. Challenges are high. But is it possible ? Is it feasible? Do we really know what could be a common shared medical record?

Medical Professionals have to appropriate these technologies to use them as best as possible for the benefits of their patients.

Keywords: Telemedicine, Health Telematics, Public Health, Homecare.

I. Introduction

The current development of Internet and new information technologies is a striking challenge for the medical profession. As E-commerce, E-business, E-education are invading the daily activities, the medical profession seems attached to old-fashioned payer medical records and slow post-office communication. There are obviously experiences of Telemedicine [1] and professional communications between physicians but this remains limited on a low scale and no there is no generalisation of a digital medical communication.

Nevertheless, many physicians are connected to internet and receive a growing number ,of E-mails for professional information or even marketing. But they merely use this system for their personal activity and continue to trust post-office or even fax for professional communications.

On the contrary, as the modalities of hospitalisation are changing, there is a growing need for a better co-ordination of care. In every country the duration of hospitalisations is diminishing dramatically. As an example, in French university hospitals, the mean length of stage of neurological patients fell from 15 days in 1985 to 5.5. days in 1999. This evolution, conjugated with the apparition of new therapies, would necessitate a better collaboration of hospitals with family doctors to improve the management of the patients. This co-ordination could take advantage of new information technologies that now permit a safe communication of healthcare professionals [2,3].

On the other hand, patients themselves find that co-ordination of care is lacking. They ask for transparency, better information, co-operation of the divers physicians who intervene, and they are now able to go on the internet and verify the type of protocols applied, and eventually the quality of the treatments they are following. Yesterday, they were passive. Now they become more and more active, particularly in cases of chronic (diabetes, hypertension) or severe (cardiac, cancer) pathologies.

The need of co-ordination and co-operation between healthcare professionals with the growing intervention of patients is tantalised in the projects of the "unique" patient record that would gather all the medical information registered during a patient's life, or in the projects of medical e-gatekeeper who would give access to this information according to the agreement of the patient and the requirement of the physician.

II. Heath Telematics : Trends and Developments.

1. During the first decade (1990-2000), Health Telematics was confounded with "Telemedicine", with the limited signification of professional exchange of data between professionals to make possible distant collaboration. The main objective was tele-expertise to allow equal access to medical expertise wherever the patient is situated. Based upon simple technologies issued from video-conferencing and synchronous communication, and reinforced by the growing success of Internet, these systems are today widespread all around the world. Their technical success is often minimised by difficulties to be maintained in activity for a long period of time due to problems of financing, organisational problems, and human factors. This Telemedicine offers interesting innovations but is not a

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revolution in the way of practicing, even in deserted areas.

2 Since 1995, Health Telematics projects were more oriented to the organisation of Telematics networks between professionals [4]. As Internet was an indisputable success, it became obvious that, sooner or later, medical communication would be digitalised. This would reinforce the coordination of activities, the cooperation of professionals, and the quality of care. The possibility to exchange digital information would make possible the access to a "patient medical record" all around the world, that would help tourists to feel better in foreign countries. But rapidly, the problem was found more complicated than the simple idea of exchanging medical information through securised e-mails systems. The physicians are not used to working in "networks", they do not share medical records; common medical records do not exist, even in a unique hospital; what is a medical record ?; exchange of information between professionals highly depends on the organisation of the Healthcare system; new communication tools (as inter-mediation platforms) have to be invented; security and confidentiality are of highest importance and more complex to solve than it appears...Nevertheless, interesting experiences are currently under development, particularly in Europe, due to the organisation of the Healthcare system. In Denmark, France, Germany, Belgium …, some regional experiences prove the feasibility of networking Healthcare professionals to reach a better level of cooperation for the quality of care.

3. Currently, in the beginning of this new century, the problem is less focused on communication between professionals than the role of the patient him (her) self in this new landscape. Patients, and more generally people, through the Internet found information they could not reach before. In a few years, Internet became the first source of medical information for the general public and patients. As an example, in the USA, 80% of internauts consult websites before going to their family doctor ! The need of qualified, and certified information becomes essential to avoid anarchy, misunderstandings and accidents. The role of Scientific and governmental organisations appears essential for this purpose.

General Public telematics applications are now beyond simple websites. With new interactive TV, the use of PCs will not be mandatory for the access to health telematics applications. One can preview new applications like tele-consultations for emergency cases, paediatrics, chronic diseases follow-ups, ...Hot-lines and call-centers will provide general public with first line solutions in the absence of the family doctor, or during the week-end, during the night, or even in the current life, if these applications prove to be safe and useful.

Aging people, medical surveillance of the elderly population will be a new challenge. Telematics application for HomeCare have to be rapidly produced to face this evolution.

The development of Health Telematics will profoundly change the organisation of healthcare [5] and the access of patients to the expertise and the treatments they need. On one hand, it is essential that engineers and scientists develop new concepts, new tools and build experiences to validate hypotheses. On the other hand, organisational problems, human constraints and cost-effectiveness require the intervention of governments (with the expertise of scientific organisations) to sustain this effort and design new ways for the Healthcare in the 21st century.

That is why we propose some recommendations for governments in order to help the development of Health Telematics in industrialised as well as developing countries.

III. Some Recommendations for the development of Information Technologies in Medicine

For the development of IT in Medicine, it is necessary to share a common view on the importance of Information and particularly Digital Information for the management of patients in all the dimensions of care. If people, professionals decision-makers are not really convinced of this importance, they will always prefer other types of investments (new expensive drugs, genetics assays, imaging modalities, emergency organisations, …) and Medical Informatics, Telemedicine and Health Telematics will stay poor and not really fruitful for both the patient, and the organisation of care.

That is why, following a report to the French Prime Minister [6], we propose a series of recommendations in order to make possible a new perspective for Health Care, based upon Information Technologies.

1. It is important to **organise a widespread diffusion of Information on Telemedicine Health Telematics and e-Health** successes and possibilities. This information will be dedicated to the general public as to professionals. It will offer a strategic view of the development of NIT in Medicine, define rational objectives for the short and medium term, and make easier the development of industrial companies specialised in the domain of Telemedicine and Health Telematics.

2. **Rules and regulations** must be established by governments, taking into account the recent developments of Internet and e-business. These rules will concern:

 a. A unique identification number for Healthcare. If this HC-ID could be identical for all the countries, it would help international medical cooperation.

 b. The payment of Telemedicine activities. For the private sector, there could be a fixed price for the payment of telemedicine consultations, reimbursed by public and private insurances. For the public sector, and particularly hospitals, it must be considered as a specific activity and included in DRGs.

c. The confidentiality and the security of nominative medical information must be guaranteed (encryption, secure access, firewalls).

3. **The Public Healthcare Sector** (essentially Hospitals) must prepare its integration into this new network. For this purpose, hospitals have to install, as soon as possible, their Hospital Information System (HIS) which must be open and communicating. This HIS must be under the responsibility of a physician specialised in the management Medical Information. Some medical domains will profit from the development of Healthcare Telematics such as: Emergency, Medical Imaging, Homecare, Oncology, Penitential Medicine…

4. For the professionals who work **in the Private Sector** (General Practitioners, Specialists, Private Hospitals and Clinics, but also pharmacists, nurses, physiotherapists, labs, …), it is important to reinforce incentives for computerisation. The computerised medical record must be encouraged by all the scientific societies. These incentives can be supported by the governments and Assurance Companies: diminution of the costs of telecommunications for Healthcare Professionals, gratuity of telecommunications for labs, for Imaging Units, for Hospitals which are providing large data flows.

5. **The development of coordinated healthcare networks** to enhance the cooperation between Healthcare providers taking charge of pathologies or groups of patients must be encouraged. At a macro-economic level, this co-ordination of medical and nursing activities will guarantee a better efficiency of the System. Guidelines must be documented, updated and disseminated through the web so that the professionals will be able to consult them at a glance.

6. It is essential **to capitalise on available and successful applications**. It would not be worthwhile to develop a technology that is already used in another region or country. The problem of the transferability of Telematics Applications for Healthcare must be explored. Governmental and Scientific incentives can be proposed to promote and disseminate successful Telemedicine Applications.

7. The **Quality of Information on Internet** poses a real problem today. It seems important to create a "Certification Board" in which academic associations, patients organisations, and professionals could intervene. Such organisations as "Health On the Net" (H.O.N.) must be encouraged and financed to track undesirable such called "medical" websites. The quality of Information must particularly be guaranteed for:
   a. E-commerce in Healthcare
   b. Medical records accessible on the net: strict rules have to be edited for the use of nominative medical information

8. During their curriculum, **Healthcare Professionals must be trained** in an extensive use of New Information Technologies. All the medical schools must develop such a mandatory qualifying training.

9. Specific developments must be encouraged for **social and humanitarian purposes**. Telemedicine and Health Telematics are not reserved to developed countries but are really a new possibility for developing countries to accelerate the quality of care for their people. NIT can also reinforce the cooperation between industrialised and developing countries.

IV. Conclusion

The professional communication will more and more use the electronic highways for a rapid and convenient transmission of medical information. This professional usage will be possible only if confidentiality and security are fully respected. Moreover the quality of service and particularly the simplicity of interfaces are striking factors of success.

Patients themselves are favourable to this use as this electronic communication appears as a mean for transparency of the medical dossier and co-ordination of care that is too often the weak point of the healthcare system.

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